

CLAIMS:

1. A decoupling clutch system for use in a marine craft, the system including a decoupling clutch having a single clutch area and being separate from and not associated with a gearbox or the like, the decoupling clutch system including an input
5 shaft for operative connection to a drive shaft of the marine craft, and being arranged to drive, via the decoupling clutch, an output shaft which, in use, is operatively connected to a propeller, jet drive or the like of the marine craft, the decoupling clutch system further including a piston or the like for controlling engagement of the clutch, a control system, means for monitoring the input shaft speed and transmitting the input shaft
10 speed to the control system, means for monitoring the output shaft speed and transmitting the output shaft speed to the control system, the control system being arranged to control slippage of the clutch by monitoring both the input shaft speed and the output shaft speeds and adjusting the engaging forces on the clutch to adjust clutch slippage accordingly.
- 15 2. A decoupling clutch system as claimed in claim 1 wherein the engaging force on the clutch provided by the piston is controlled by controlling the pressure in the piston using direct acting high flow electro hydraulic solenoids.
3. A decoupling clutch system as claimed in claim 1 or 2 including a biasing means such as a spring or the like, biased to disengage the clutch.
- 20 4. A decoupling clutch system as claimed in any one of claims 1 to 3 wherein friction plates are splined to the input shaft and drive is provided to the output shaft through clutch plates which are splined to a clutch drum which is splined to the output shaft.
5. A decoupling clutch system as claimed in any one of claims 1 to 3 wherein
25 friction plates are splined to the output shaft and drive is provided from the input shaft through clutch plates which are splined to a clutch drum which is splined to the input shaft.
6. A watercraft including a drive unit including an engine and a transmission and an output shaft to a propeller, jet drive, or the like characterised by a decoupling clutch
30 system including a clutch having a single clutch area and being separate from and not associated with a gearbox or the like and having an input shaft operatively connected to a drive shaft of the marine craft, and being arranged to drive, via the decoupling clutch, an output shaft which is operatively connected to a propeller, jet drive or the like of the marine craft, the decoupling clutch system further including a piston or the like for
35 controlling engagement of the clutch, a control system, means for monitoring the input shaft speed and transmitting the input shaft speed to the control system, means for

monitoring the output shaft speed and transmitting the output shaft speed to the control system, the control system being arranged to control slippage of the clutch by monitoring both the input shaft speed and the output shaft speeds and adjusting the engaging forces on the clutch to adjust clutch slippage accordingly.

5 7. A decoupling clutch system as claimed in claim 6 wherein the engaging force on the clutch provided by the piston is controlled by controlling the pressure in the piston using direct acting high flow electro hydraulic solenoids.

8. A decoupling clutch system as claimed in claim 6 or 7 including a biasing means such as a spring or the like, biased to disengage the clutch.